
LABORATORY
OF THE
INLAND REVENUE DEPARTMENT

OTTAWA, CANADA

BULLETIN No. 393

SODIUM PHOSPHATE

NOTES AND COMMENTS.

Under this heading, as occasion arises, the Bulletins issued by this Department will contain, as an appendix, such comment as may seem necessary or advisable upon matters relating to the work of the Department in connection with the administration of the Adulteration Act, the Fertilizers Act, the Feeding Stuffs Act or the Proprietary Medicines Act.

It frequently happens that correspondents ask information regarding the above Acts, of such nature that the matter in question possesses general interest, and comment upon it would prove acceptable and useful to others than the immediate questioner. In such cases the reply may find a place in these columns. For convenience of reference these notes will be numbered in series.

A. MCGILL,
Chief Analyst.

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SODIUM PHOSPHATE

OTTAWA, February 27, 1918.

J. U. VINCENT, Esq., K.C., B.A., LPh.,
Deputy Minister of Inland Revenue.

SIR,—I beg to hand you a report upon Sodium Phosphate, and Effervescent Sodium Phosphate.

Sodium Phosphate, otherwise known as *Sodii Phosphas* or *Di-sodium Hydrogen Phosphate*, or *Phosphate of Soda*, is one of the most widely used drugs of the pharmacopœia, and is thus described in the British Pharmacopœia, Edition 1914.

Characters and Tests. Transparent, colourless, rhombic prisms, efflorescent. Taste saline. Soluble in 7 parts of water, the solution being slightly alkaline to litmus. Yields the reactions characteristic of sodium and of phosphates. Five grammes dissolved in 50 millilitres of water require for neutralization not less than 13.9 millilitres of N/1 solution of sulphuric acid, the reaction of methyl orange being used as indicator. Yields no characteristic reactions with potassium, ammonium, carbonates, or chlorides, and not more than the slightest reaction for sulphates. Lead limit 5 parts per million. Arsenic limit 5 parts per million.

In the present report, this article is represented by 144 samples.

Non-effloresced crystals of sodium phosphate contain 60.33 per cent of water, and 19.83 per cent of phosphoric acid (stated as phosphoric anhydride, P_2O_5 .)

The salt is highly efflorescent (i.e. loses water of crystallization in contact with air) and in consequence of this fact, its content in water is decreased and its content of phosphoric acid is proportionally augmented on prolonged keeping, unless proper precautions are taken. Thus, the loss of 5 per cent of water would cause the phosphoric acid content to be raised to 20.5 per cent nearly; while loss of 10 per cent water would raise the phosphoric content to 21.1 per cent. By artificial drying to loss of 50 per cent of its water of crystallization, the phosphoric acid content is raised to 28.4 per cent, and it is quite apparent that many of the samples herein reported have been desiccated so as to cause the loss of even more than 50 per cent of normal water of crystallization.

In the manufacture of effervescent sodium phosphate it is necessary to dry the sodium phosphate; and the pharmacopœia prescribes drying to the loss of about 60 per cent of the weight of the salt. This treatment renders it practically anhydrous; and its phosphoric acid content would then be raised to 50 per cent by weight.

By continued exposure to the air, at ordinary temperatures, crystallized sodium phosphate is said to lose five out of its normal twelve molecules of water of crystallization. This would result in a salt containing 26.5 per cent of phosphoric acid. In all samples showing a higher percentage than 26.5, it is probable that these have been intentionally subjected to dessication, or have been for a long time kept in an abnormally dry atmosphere.

The result of dessication is to make the sodium phosphate content more than 100 per cent when calculated from the phosphoric acid found. The number thus obtained has however, a practical value; and should be known to the physician, if regard is to be had to the quantity prescribed. Thus, if a prescription calling for 100 parts of sodium phosphate is filled by a partially dried salt containing 26.5 per cent of phosphoric acid, the patient receives about one-third more of the drug than the physician directed. It will be seen, from the table, that a large number of these samples are so abnormal, that a given weight of them corresponds to much more than the same weight of sodium phosphate; in a few cases to nearly double that weight.

Sodium phosphate is prepared by the interaction of acid calcium phosphate with sodium carbonate. The acid calcium phosphate is itself prepared by treating a neutral calcium phosphate with sulphuric acid. It is well known that much of the sulphuric acid of commerce contains arsenic, derived from the raw material (pyrites) employed in its manufacture. In consequence of this fact, arsenic is frequently introduced into acid calcium phosphate, and thence into the sodium phosphate, prepared from it.

The occasional presence of notable amounts of arsenic in sodium phosphate was pointed out in 1900 (see bull. 181). Six samples of the drug were found to contain from 5 to 10 parts of arsenic per million.

The Pharmacopœia fixes the limit for arsenic at 5 parts per million, and this limit is legalized for Canada by Order in Council of October, 1912, (G. 1048). A recent report to the Local Government Board of Great Britain, by Dr. MacFadden, (1916-17) includes certain samples (about 50 in number) of acid calcium phosphate in which the arsenic was excessive, reaching as much as 400 parts per million. In one sample 643 parts per million were found. It is easily to be understood how arsenic, in considerable amount, may pass over into sodium phosphate manufactured from an acid calcium phosphate of such character.

Of 144 samples of sodium phosphate herein reported (Table I), 64 samples are found to contain no arsenic, or only negligible traces. Sixty-eight samples contain amounts not exceeding 5 parts per million, while 12 samples contain above 5 parts per million, the highest amount found being 25 parts.

Effervescent Sodium Phosphate (Sodii Phosphas Effervescens) is a mixture of sodium phosphate with sodium bi-carbonate and citric and tartaric acids. It is, in effect, a convenient mode of administering sodium phosphate; and contains about one-third of its weight of this salt. The usual dose is about double that for sodium phosphate.

One hundred and sixty-nine (169) samples of this article are reported in Table II. So far as arsenic is concerned, they show as follows:—

	Samples.
No arsenic or traces only.	74
Less than 5 parts per million.	94
More than 5 parts per million.	1

169

It is evident, however, that these samples are chiefly made from sodium phosphate containing more or less arsenic, and the explanation of a better showing is the fact that only about one-third of the weight of the article consists of sodium phosphate.

A considerable deviation from the pharmacopœal formula is observed in many of these samples; and most of them contain decidedly more sodium phosphate than the formula demands. Two samples (7357 and 5022) are apparently merely sodium phosphate supplied by mistake. Only one sample contains arsenic in sufficient amount to call for comment.

Although none of the samples herein reported can be regarded as positively dangerous, in regard to arsenical content, it is sufficiently apparent that manufacturing chemists must test all samples of sodium phosphate for arsenic, and reject such as show more than the legal limit of 5 parts per million, if they would meet the requirements of the British Pharmacopœia. The United States Pharmacopœia fixes the limit for arsenic at 10 parts per million; and the Adulteration Act (Section 7b), recognizes this Pharmacopœia. When, however, any other standard than that set by the British Pharmacopœia is in question, we expect such authority to be quoted. Failing this, the standard of the British Pharmacopœia governs.

I beg to recommend publication of this report as Bulletin No. 393.

I have the honour to be, Sir,

Your obedient servant,

A. MCGILL,

Chief Analyst.

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BULLETIN No. 393—PHOSPHATE OF SODA. PLAIN—TABLE I.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cust.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (In not in expression of opinion).	Results of Analysis			Remarks and Opinion of the Chief Analyst
				Quantity.	Centre.			Phosphoric Acid P ₂ O ₅ per cent.	Arsenic, parts per million.	Sodium Phosphate (Na ₂ HPO ₄ 12 H ₂ O).	
1917.											
July 25	Phosphate of Soda, Plain.	76631	G. A. Burbridge, Halifax.	1 lb.	40	Nat. Drug and Chem. Co., Halifax.	Mfrs.	29.4	None	102.8	76631
" 25	"	76632	C. A. Barnstead, Halifax	1 "	50	Howard's Mfg. Co., Ltd., England.	Lyman's, real.	29.5	"	103.3	76632
" 25	"	76633	Jas. D. Walsh, Halifax.	1 "	35	Thomson Chem. Co., Baltimore, Md.	M. D. & Ch. Co., Halifax.	23.7	"	119.4	76633
" 26	"	76634	P. H. Holdsworth, Digby, N.S.	1 "	75	E. R. Squibbs, Brooklyn, U.S.A.	Mfrs.	26.4	"	135.1	76634
Aug. 8	"	76635	C. A. Ryan, Windsor, N.S.	1 "	25	Nat. Drug and Chem. Co., Halifax.	"	29.3	"	102.3	76635
" 10	"	76636	Kinley's, Ltd., Bridge-water, N.S.	1 "	40	"	"	29.9	"	105.3	76636
" 22	"	5376	Carow & Fraser, Glasgow, N.S.	1 "	45	N. D. and Ch. Co.	"	29.5	"	103.3	53768
" 7	"	53769	E. S. Mackenzie, Glasgow, N.S.	1 "	45	Mallinckrodt Chem. Works, New York.	"	22.1	"	111.4	53769
" 8	"	53770	T. H. Cochran, Glasgow, N.S.	1 "	50	"	"	25.6	9.5	125.8	53770
" 9	"	53771	A. C. Bell, New Glasgow, N.S.	1 "	35	Lyman's, Ltd., Montreal.	"	23.6	2.0	118.9	53771
" 9	"	53772	D. McNeil, Stellarton, N.S.	1 "	35	Nat. Drug and Chem. Co. of Canada.	"	23.2	None.	116.9	53772

DISTRICT OF NOVA SCOTIA.—R. J. WAUGH, INSPECTOR, W. A. PETIPAS, TEMPORARY INSPECTOR.

DISTRICT OF CAPE BRETON—E. F. MACKENZIE, INSPECTOR.

Aug. 14	Phosphate of Soda.	63880 C. H. Harshman, Sydney, N.S.	50	Lyman's, Ltd., Montreal.	25 1	10 0	131 5	62880	Arsenic in excess.
" 23	"	63883 J. J. Turnbull, Sydney, N.S.	50	Nat. Drug Co., Canada.	23 9	None.	120 5	62883	

DISTRICT OF NEW BRUNSWICK—JOHN C. FERGUSON, INSPECTOR.

June 20	Phosphate of Soda.	78051 Nat. Drug and Chem. Co., St. John, N.B.	40	Mallinckrodt, Philadelphia.	26 3	None.	132 6	78051	
July 3	"	78052 E. Clinton Brown, St. John, N.B.	35	Mallinckrodt Chem. Works, St. Louis.	25 1	"	116 4	78052	
" 4	"	78053 A. Chipman Smith & Co., St. John, N.B.	35	Nat. Drug and Chem. Co., Ltd., Canada.	25 8	"	130 0	78053	
" 4	"	78054 Moore's Drug Store, St. John, N.B.	75	Lyman's, Ltd., Montreal.	25 7	11 0	125 5	78054	Arsenic in excess.
" 9	"	78055 F. W. Munro, St. John, N.B.	25	Mallinckrodt Chem. Works, Montreal.	25 7	0 5	129 5	78055	
" 26	"	78056 Johnston & Johnson, St. Stephen, N.B.	35	Powers Weightman & Rosengarten, Philadelphia.	25 9	1 0	135 6	78056	
Aug. 8	"	78057 Stevens Bros., Woodstock, N.B.	40	E. G. West & Co., Toronto.	21 1	9 0	106 2	78057	Arsenic in excess.
" 24	"	78058 C. P. Hickey, Chatham, N.B.	50	Nat. Drug and Chem. Co., Ltd.	20 9	None.	145 3	78058	
" 23	"	78059 Stevens Pharmacy, Moncton, N.B.	35	Mallinckrodt Chem. Works, St. Louis.	23 6	None.	118 9	78059	
" 25	"	78060 Dickson & Troy, Newcastle, N.B.	30	Lyman's, Ltd., Montreal.	22 9	"	115 4	78060	

DISTRICT OF QUEBEC CITY—F. X. W. E. BELAND, INSPECTOR.

June 21	Phosphate of Soda.	71226 A. E. Francoeur, 384 St. Jean, Quebec.	60	Lyman's Montreal.	23 7	1 0	119 4	71226	
" 21	"	71227 Elz. Jolicœur, 138 St. Jean, Quebec.	60	"	22 3	None.	112 4	71227	
" 21	"	71228 J. C. Dubé, 1F St. Jean, Quebec.	40	"	26 5	0 5	133 6	71228	
" 21	"	71229 J. G. Lavoie, St. Jean, Quebec.	65	Mallinckrodt.	26 3	1 0	142 6	71229	
" 21	"	71230 Laroché & Co., 4 de la Fabrique, Quebec.	25	Lyman's, Ltd.	21 2	None.	105 8	71230	

BULLETIN No. 393—PHOSPHATE OF SODA PLAIN—TABLE I.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.			No. of Sample.	Remarks and Opinion of the Chief Analyst.
				Quantity.	Cents.			Phosphoric Acid P_2O_5 per cent.	Arsenic, parts per million.	Sodium Phosphate (Na_2HPO_4 , 12 H_2O)		

DISTRICT OF QUEBEC CITY—Concluded.

1917.												
June 21	Phosphate of Soda.	71234	Dr. Ed. Morin, Cote de la Montagne, Quebec.	1 lb.	15	Unknown	Unknown	26.1	None.	131.5	71234	
" 22	"	71237	W. E. Rogers, 44 Fabrique, Quebec.	"	50	Nat. Drug Co.	Manufacturers.	21.9	"	110.4	71237	
" 22	"	71242	V. Giroux, 16 St. Pierre, Quebec.	"	80	"	"	22.0	"	110.8	71242	
" 22	"	71244	J. Larocque, 303 St. Paul, Quebec.	"	50	"	"	26.3	"	132.6	71244	

DISTRICT OF QUEBEC PROVINCE—T. GENDREAU, A. PELLEFIER, TEMPORARY INSPECTORS.

June 15	Phosphate of Soda.	7354	A. E. Michon, Montmagny.	1 lb.	75	Na-Dru-Co., Montreal		26.4	None.	133.1	7354	
" 16	"	7356	Dr. J. L. Gagnon, Montmagny.	"	7		J. E. Livermois, Quebec.	25.6	2.0	129.0	7356	
" 18	"	7358	Duc, Adrienne Talbot, Montmagny.	"	60	Mallinckrodt Chem. Works, Montreal.		28.9	Trace.	145.6	7358	
July 4	"	5021	E. O. Cloutier, Fraserville, P.Q.	"	60	Unknown	Unknown	28.4	"	143.1	5021	

July	4	"	"	5021	E. O. Cloutier, Fraserville, P.Q.	60	Unknown	Unknown	28.4	"	143.1	5021
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DISTRICT OF THREE RIVERS—DR. V. P. LAVALLEE, INSPECTOR.

June 12	Phosphate of Soda.	7447 J. T. Gaudet, Joliette.	1 lb.	1.50	Nat. Drug & Chem. Co., Montreal.	25.4	None.	128.6	7447
" 12	"	7448 Pharmacie Geoffrey, Joliette.	1 "	30	Lyman's, Ltd., Montreal.	33.8	15.0	170.4	7448
" 13	"	7456 Dr. J. A. Sarrazin, St. Gabriel de Brandon.	1 "	40	Merck Co., New York.	26.4	1.0	133.1	7456
June 13	Phosphate of Soda.	7457 Dr. J. A. Sarrazin, St. Gabriel de Brandon.	1 lb.	1.50	John Wyeth Bro., Philadelphia.	26.2	None.	132.0	7457
" 20	"	7483 J. A. Peltier, Three Rivers.	3 lbs.	1.50	" "	27.2	"	137.1	7483

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

Aug. 13	Phosphate of Soda.	58483 A. F. Larose, 66 St. Lawrence Boul., Montreal.	1 lb.	50	Merck's	23.4	None.	117.9	58483
" 13	"	58484 Quebecville, Guerin & Belanger, 1361 St. Catherine St. E., Montreal.	1 "	35	Mallinckrodt Chem. Works.	22.9	1.0	115.4	58484
" 13	"	58485 Paquin Wilbrod, 640 Mt. Royal Ave. E., Montreal.	1 "	25	Nat. Drug & Chem. Co., Ltd.	23.1	None.	116.4	58485
" 14	"	58496 J. H. Goulden, Bleury St., Montreal.	1 "	45	Lymans Ltd.	24.1	4.0	121.5	58496
" 14	"	58487 " " " "	1 "	50	Howard & Sons.	22.3	Trace.	112.4	58487

DISTRICT OF VALLEYFIELD—J. J. COSTIGAN, ACTING INSPECTOR.

June 20	Phosphate of Soda.	74321 F. C. Saunders, Bedford, P.Q.	1 lb.	35	Lymans Ltd.	28.7	Trace.	144.6	74321
" 21	"	74322 Arm. Bourgeois, St. Johns, P.Q.	1 "	50	Merck's	26.8	None.	135.1	74322
" 21	"	74323 P. P. Sabourin, St. Johns, P.Q.	1 "	35	"	24.4	"	123.0	74323
" 26	"	74324 John McLeister, Alexandria.	1 "	50	Lymans Ltd.	28.7	"	144.6	74324
" 28	"	74325 Geo. W. Johnston, Cowansville.	1 "	35	N. D. & Chem. Co. Ltd.	23.5	Trace.	118.4	74325
July 11	"	74326 S. E. McGibbon, Hawkesbury.	1 "	53	Merck's	23.4	3.0	117.0	74326

BULLETIN No. 393—PHOSPHATE OF SODA, PLAIN—TABLE 1.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.			Remarks and Opinion of the Chief Analyst.
				Quantity.	Cents.			Phosphoric Acid, P ₂ O ₅ per cent.	Arsenic, parts per million.	Sodium Phosphate (Na ₂ HPO ₄ 12 H ₂ O)	

DISTRICT OF VALLEYFIELD—Concluded.

1917.											
July 11	Phosphate of Soda.	74327	W. A. McKee, Hawkesbury.	50 lb.	50	Lymans Ltd.		21.3	Trace	107.3	74327
" 13	"	74328	James Fortune, Huntingdon.	1 "	25	Nat. Drug & Chem. Co., Ltd.		30.2	3.0	152.2	74328
" 16	"	74329	Dr. J. A. Huot, Longueuil.	1 "	30	" "		33.0	1.0	196.6	74329
" 24	"	74330	L. A. A. Giroux, St. Lambert.	1 "	35	Mallinckrodt's Chem. Works, Ltd.		28.6	1.0	114.1	74330

DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.

June 28	Phosphate of Soda.	77523	Estate W. H. Roger, Rideau St., Ottawa.	321 lb.	35	Nat. Drug & Chem. Co. Ltd., Ottawa.	Pure.	20.7	None	104.3	77523
July 7	"	77545	V. F. Kincaid, Brockville.	1 "	30	Lymans Ltd., Montreal.	Free from arsenic.	22.0	"	110.9	77545
" 7	"	77546	F. R. Curry, Brockville.	1 "	35	Mallinckrodt's Chem. Works Ltd., Montreal.	Pure U.S.P.	22.5	2.0	113.4	77546

DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.

June 13	Phosphate of Soda	78390	Estate of C. S. Prater, 1 lb.	25	N. C. Polson & Co., Kingston, Nat. Drug & Chem. Co.	28.3	5.0	142.6	78390	Arsenic in ex- cess.		
"	"	78391	T. H. Sargent, Kingston.	1 "	35	"	"	25.4	125.0	78391	Arsenic in ex- cess.	
"	"	78392	A. P. Chown, "	1 "	30	Mallinckrodt Montreal	26.0	1.0	131.0	78392	"	
"	"	78393	Mahood Drug Co. "	1 "	30	"	"	27.2	1.0	137.0	78393	"
"	"	78394	J. P. Doyle, Belleville.	1 "	25	Powers, Weightman Rosengarten.	32.2	5.0	162.3	78394	"	
"	"	78395	D. M. Waters, "	1 "	30	Lynans, Montreal	28.5	None	143.0	78395	"	
"	"	78396	C. B. Allison, Picton.	1 "	40	"	"	28.8	Trace.	145.1	78396	"
"	"	78397	E. D. Case, Picton	1 "	35	Powers, Weightman Rosengarten	26.8	7.0	135.1	78397	Arsenic in ex- cess.	
"	"	78398	J. H. Dickey, Peterboro.	1 "	30	Lynans, Montreal	27.4	10.0	138.1	78398	Arsenic in ex- cess.	
"	"	78399	T. Geo. Watson, Port Hope.	1 "	25	Nat. Drug Co., Toronto	27.0	None	136.1	78399	"	

DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

June 21	Phosphate of Soda.	77887	F. A. Jacobs, 361 Broadview Ave., Toronto.	1 lb.	25	Thomson Chem. Co., Baltimore, Md.	29.8	1.0	150.2	77888	Arsenic in excess.
" 21	"	77889	F. C. Fielding, 347 Danforth Ave., Toronto.	1 "	30	Powers, Weightman Rosengarten Philadelphia.	29.4	11.0	148.2	77889	"
" 21	"	77890	Norris Drug Store, 5001 Bloor St. W., Toronto.	1 "	25	Mallinckrodt Chem. Works, Montreal.	26.6	Trace.	134.0	77890	"
" 21	"	77891	The Ferragh Drug Co., Bloor and Bathurst Sts Toronto.	1 "	25	E. G. West & Co., Toronto.	28.0	"	141.1	77891	"
" 22	"	77893	F. H. Webb, 714 Queen St. E., Toronto.	1 "	26	The Lynan Bros. Co., Ltd. Toronto.	28.0	1.0	141.1	77893	"
" 22	"	77894	Owl Drug Store, 771 Queen St. E., Toronto.	1 "	42	Nat. Drug & Chem. Co., Toronto.	27.8	None	140.1	77894	"
" 22	"	77895	F. J. Sanders, 822 Queen St. E., Toronto.	1 "	26	Merck & Co., Montreal.	23.0	"	120.4	77895	"
" 23	"	77896	J. A. Breen, 216 Queen St. E., Toronto.	1 "	45	E. R. Squibb & Sons, New York.	30.0	1.0	151.2	77896	"
" 26	"	77898	L. K. Liggett & Co., Ltd., 224 Yonge St., Toronto.	1 "	25	E. G. West & Co., Toronto.	28.0	11.0	141.1	77898	Arsenic in excess.
" 26	"	77899	The T. Eaton Co., Ltd., Queen and Yonge Sts., Toronto.	1 "	25	Howard & Sons, London, Eng.	29.2	None.	147.2	77899	"

BULLETIN No. 393—PHOSPHATE OF SODA, PLAIN—TABLE I.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.			Remarks and Opinion of the Chief Analyst.
				Quantity.	Cents.			Phosphoric Acid P ₂ O ₅ per cent.	Arsenic, parts per million.	Sodium Phosphate (Na ₂ HPO ₄ 12 H ₂ O)	
						Manufacturer.	Furnisher.				No. of Sample.

DISTRICT OF HAMILTON—H. J. DAGER, ACTING INSPECTOR.

1917													
July	3	Phosphate of Soda.	77934	F. F. Bogardus, Guelph.	1 lb.	35	Thomsen Chem. Co., Baltimore.	Pure..	23.2	None.	116.9	77934	
"	4	"	77935	A. B. Petrie, Guelph.	1 "	25	"	"	26.2	13.0	142.1	77935	Arsenic in ex- cess.
"	5	"	77936	A. G. Haemel, Waterloo, Ont.	1 "	35	Mallinckrodt Chem. Works, St. Louis.	Pure.	24.1	Trace.	121.5	77936	
"	9	"	77937	C. A. C. Cameron, Brant ford.	1 "	25	E. G. W. & Co., Toronto.	"	21.7	9.0	109.4	77937	Arsenic in ex- cess.
"	9	"	77938	T. G. Bowler, Brantford.	1 "	32	Merck & Co., New York.	"	30.6	1.0	154.2	77938	
"	11	"	77940	A. W. Garner, St. Catha- rines.	1 "	25	Lyman Bros. & Co., Ltd., Toronto.	"	30.1	None.	101.3	77940	
"	11	"	77941	Wm. Erskine, St. Catha- rines.	1 "	35	E. G. West & Co., Toronto.	Pure B.P.	25.8	4.0	130.0	77941	
"	12	"	77943	E. B. Neally, 105 King St. E., Hamilton.	1 "	52	R. R. Squibb, New York.	"	24.5	1.0	123.5	77943	
"	12	"	77953	J. A. Reche, John and Main Sts., Hamilton.	1 "	35	Nat. Drug & Chem. Co., Ltd., Hamilton.	"	26.2	2.0	132.0	77953	
"	13	"	77966	T. Sweet, 270 King St., W., Hamilton.	1 "	35	Powers Weightman & Rosengarten, Phila- delphia.	U. S. P.	28.0	5.0	141.1	77966	

DISTRICT OF WINDSOR—JOHN TALBOT, INSPECTOR.

June 12	Phosphate of Soda.	65211	W. S. Howey, Exeter.	1 lb.	35	Powers Weightman & Rosengarten, Philadelphia.	.....	.....	24 3	5 0	122 5	65211
" 13	"	65224	J. E. Hovey, Clinton.	1 "	25	Mallinckrodt, New York.	.....	Pure	27 1	None.	138 1	65224
" 13	"	65226	W. S. R. Holmes, Clinton.	1 "	35	Mallinckrodt, Montreal.	.....	"	28 1	2 0	131 5	65226
" 14	"	65234	J. A. Campbell, Goderich.	1 "	20	E. G. West & Co., Toronto.	.....	"	27 9	8 0	140 6	65234
" 14	"	65235	E. R. Wigle, Goderich.	1 "	25	Powers Weightman & Rosengarten, Philadelphia.	.....	.....	24 6	1 0	124 0	65235
" 14	"	65238	H. C. Dunlop, Goderich.	1 "	22	Nat. Drug Co.	.....	.....	25 6	None.	129 0	65238
" 15	"	65248	Pepper's Drug Store, Woodstock, Ont.	1 "	35	Powers Weightman & Rosengarten, Philadelphia.	.....	.....	26 5	1 0	134 0	65248
" 18	"	65251	Standard Drug Co., London, Ont.	1 "	25	Nat. Drug Co.	.....	Pure	27 1	None.	136 6	65251
" 18	"	65256	H. J. Childs, London East.	1 "	25	"	.....	.....	26 9	1 0	135 6	65256
" 19	"	65256	Cook's Red Drug Store, St. Thomas.	1 "	35	Mallinckrodt Chem. Works, St. Louis.	.....	Pure	26 5	1 0	134 0	65256

Arenic in excess.

DISTRICT OF NORTHERN ONTARIO—THOS. E. ARMSTRONG, INSPECTOR.

July	3 Phosphate of Soda	75604	C. A. Wismer, New Liskeard.	1 lb.	80	Nat. Drug Co., Toronto.	26 0	1 0	131 0	75604
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DISTRICT OF MANITOBA—J. B. COSGROVE, INSPECTOR.

June 27	Phosphate of Soda	75358	L. A. Rues, 1692 1/2 Portage Ave., Winnipeg.	1 "	35	Nat. Drug Co., Winnipeg.	26 0	1 0	131 0	75358
" 27	"	75359	G. A. Walker, 9 Provencher Ave., St. Boniface.	1 "	50	Lyman & Co., Montreal.	.....	.....	27 0	2 0	136 1	75359
" 27	"	75360	Sargent Pharmacy, 724 1/2 Sargent Ave., Winnipeg.	1 "	40	Nat. Drug Co., Winnipeg.	.....	.....	29 0	1 0	146 2	75360
" 29	"	75361	Public Drug Co., 560 Main St., Winnipeg.	1 "	45	Mallinckrodt Chem. Works, Montreal.	.....	.....	25 3	3 0	128 0	75361
" 29	"	75362	Andrews Arch. Drug Store, 229 Portage Ave., Winnipeg.	1 "	60	Unknown	.....	Made in England.	22 0	4 0	162 0	75362

BULLETIN No. 393—PHOSPHATE OF SODA, PLAIN—TABLE I.

Date of Collection.	Nature of Sample	No. of Sample	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report (If not an expression of opinion).	Results of Analysis.				Remarks and Opinion of the Chief Analyst.
				Quantity.	Cent.			Phosphoric Acid P ₂ O ₅ per cent.	Arsenic, parts per million.	Sodium Phosphate (Na ₂ HPO ₄ 12 H ₂ O).	No. of Sample.	

DISTRICT OF MANITOBA—Continued.

1917.												
July 4	Phosphate of Soda.	75363	Central Drug Hall, Loisse- vain.	1 lb.	40	Nat. Drug Co., Win- nipeg.	.....	22.0	3.0	110.9	75363	
" 30	"	75364	McPhee's Drug Store.	1 "	75	Nat. Drug Co., Win- nipeg.	.....	27.0	3.0	136.1	75364	
" 30	"	75365	Brandon. Clements Drug Store.	1 "	50	Powers Weightman, Philadelphia.	.....	25.0	4.0	126.0	75365	
" 31	"	75366	Brandon. Hutchings Drug Store.	1 "	50	Nat. Drug Co., Win- nipeg.	.....	25.5	3.0	128.5	75366	
Aug. 1	"	75367	658 Tenth St., Brandon. Doc. A. Lawson, Carberry	1 "	50	E. G. West & Co., Toronto.	.....	24.0	4.0	121.0	75367	
" 2	"	75368	Gordon Mitchell Co., 676 1/2 Main St., Winnipeg.	1 "	50	C. E. Frost, Montreal.	.....	26.0	4.0	131.0	75368	

DISTRICT OF SASKATCHEWAN—L. H. HALL, INSPECTOR.

June 14	Phosphate of Soda.	77041	H. S. Hamilton, Moose- Jaw.	1 lb.	50	Nat. Drug & Chem- Co., Montreal.	.....	28.0	4.0	141.1	77041	
" 22	"	77042	Kelly Drug Co., Regina.	1 "	50	E. G. West & Co., Tor- onto.	.....	26.0	5.0	131.0	77042	
" 23	"	77045	Canada Drug & Book Co., Regina.	1 "	35	Nat. Drug & Chem- Co., Montreal.	.....	24.0	5.0	121.0	77045	
Aug. 7	"	77043	Harry J. Winton, Gowan, Jaw.	1 "	50	Nat. Drug & Chem- Co., Toronto.	.....	29.0	3.0	146.2	77043	
" 11	"	77044	H. A. Davidson, Moose- Jaw.	1 "	50	Mallinckrodt's Chem- Works, Montreal.	.....	23.5	3.0	118.4	77044	

BULLETIN No. 393—PHOSPHATE OF SODA, PLAIN—TABLE I.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cont.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.			Remarks and Opinion of the Chief Analyst.
				Quantity.	Cent.			Phosphoric Acid P ₂ O ₅ per cent.	Arsenic, parts per million.	Sodium Phosphate (Na ₂ HPO ₄ 12 H ₂ O)	

DISTRICT OF VANCOUVER—Concluded.

1917.											
June 1.	Phosphate of Soda.	75791	C. Muddell, 37 Hastings St. E., Vancouver.	1 lb.	50	Mallinckrodt Chem. Works, St. Louis.	.....	20.00	0.5	100.8	75794
" 18	"	75796	Red Star Drug Store, 11 Cordova St., W., Vancouver.	1 " 40	40	"	.....	20.64	0.7	104.0	75795
" 26	"	75796	The Reliable Pharmacy, 1850 Commercial Drive, Vancouver.	1 " 50	50	Howart & Sons, Ltd., London, Eng.	.....	20.80	Nil	104.8	75796
" 26	"	75797	W. B. Hunter, 1003 Commercial Drive, Vancouver.	1 " 30	30	The Lyman Bros. & Co., Ltd., Toronto.	.....	20.96	0.7	105.6	75797
" 2	"	75798	R. E. Frost, 1403 Commercial Drive, Vancouver.	1 " 50	50	Nat. Drug. & Chem. Co., Ltd.	.....	20.16	Trace	101.6	75798
" 26	"	75799	W. B. Hunter, 1003 Commercial Drive, Vancouver.	1 " 35	35	"	.....	20.88	0.7	106.2	75799
" 27	"	75800	Central Drug Store, 161 Cordova St., W., Vancouver.	1 " 40	40	Mallinckrodt Chem. Works St. Louis.	.....	20.72	Trace	104.4	75800
" 27	"	75801	H. M. Smith, 2286 4th Ave., W., Vancouver.	1 " 42	42	"	.....	20.80	"	104.8	75801

DISTRICT OF VICTORIA—G. G. ARMYTAGE, INSPECTOR.

" 27	"	"	75912	H. M. Smith, Ave., W., Vancouver.	4th 1 " .. 42	"	"	"	"	20 84	"	104 8	75901
July 13	Phosphate of Soda	75912	F. C. Stearman, Nanaimo	1 " .. 50	Nat. Drug & Chem. Co., Ltd.	20 72	Trace.	104 4	75912				
" 25	"	75913	W. Jackson, 1503 Douglas St., Victoria.	1 " .. 40	Malinckrodt Chem. Works, St. Louis.	21 12	Nil ..	106 1	75913				
" 26	"	75914	Dean & Hiscocks, 627 Yates St., Victoria.	1 " .. 50	Lymans, Ltd., Mont real.	25 36	Trace.	127 8	75914				
" 26	"	75915	Thos. Shotbolt, 589 John- son St., Victoria.	.....	Nat. Drug & Chem. Co., Ltd.	24 06	"	121 4	75915			
" 26	"	75916	H. W. Brown & Co., Es- quimalt Road and Head St., Vancouver.	1 lb. 40	Malinckrodt Chem. Works, St. Louis.	24 40	Nil ..	123 0	75916				
" 26	"	75917	W. W. Gardiner, Pan- dora and Cook Sts., Vic- toria.	1 " .. 50	"	24 48	Trace.	123 3	75917				

BULLETIN No. 393—PHOSPHATE OF SODA EFFERVESCENT—TABLE II.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.		Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.			Remarks and Opinion of the Chief Analyst.
				Quantity.	Cent.	Manufacturer.	Furnisher		Phosphoric Acid P ₂ O ₅ per cent.	Arge. parts per million.	Sodium Phosphate (Na ₂ HPO ₄ 12 H ₂ O)	
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR; W. A. PETIPAS, TEMPORARY INSPECTOR.												
1917.												
July 20	Phosphate of Soda (Eff.)	76641	Nat. Drug & Chem. Co., Halifax.	3 lb	1 13	Vendors			10.50	None	52.9	76641
" 27	"	76642	C. A. Barnston, Halifax	"	75	Vendor			6.65	"	33.5	76642
" 25	"	76643	Brown Bros., Halifax	"	1 00	H. K. Wampole Co., Sarnia, Ont.	Manufac- turers.		8.65	"	43.6	76643
" 25	"	76644	G. A. Burbridge, Halifax.	"	1 00	C. E. Frosst Co., Mon- treal.	"		8.70	"	43.8	76644
" 26	"	76645	Jas. D. Walsh, Halifax	"	1 50	John Wyeth, Philadel- phia.	"		6.05	"	30.7	76645
Aug. 9	"	76646	G. C. McDougall, Kent- ville, N.S.	"	90	Nat. Drug & Chem. Co., Halifax.	"		10.00	"	50.4	76646
" 10	"	76647	H. E. Wilson, Windsor, N.S.	"	90	H. K. Wampole Co., Sarnia, Ont.	"		8.40	"	43.3	76647
" 8	"	53758	Carew & Fraser, New Glas- gow, N.S.	12 ozs.	1 20	Parke, Davis & Co., Montreal.			9.10	"	45.9	53758
" 8	"	53759	E. S. MacKenzie, New Glasgow, N.S.	1 lb.	1 00	Nat. Drug & Chem. Co., Montreal.	Manufac- turers.		10.05	"	50.6	53759
" 9	"	53760	T. H. Cochrane, New Glasgow, N.S.	3 lbs.	1 50	H. K. Wampole & Co., Perth, Ont.	"		8.85	"	44.6	53760
" 9	"	53761	A. C. Bell, New Glasgow, N.S.	3 "	1 05	John Wyeth & Bros., Philadelphia.	Lyman's Ltd Montreal.		6.50	"	32.8	53761
" 9	"	53762	J. Burke Aikens, Stellar ton, N.S.	3 "	1 05	C. E. Frosst & Co., Montreal.	Manufac- turers.		8.85	"	44.6	53762
" 9	"	53763	D. MacNeil, Stellarton, N.S.	3 "	1 20	H. K. Wampole & Co., Perth, Ont.	"		9.15	"	46.1	53763
" 9	"	53764	" " " "	3 "	1 20	Moyes Chem. Co., Tor- onto.	"		6.75	"	34.0	53764
" 9	"	53765	" " " "	3 "	1 20	C. E. Frosst, Co., Mon- treal.	"		9.10	"	45.9	53765

DISTRICT OF CAPE BRETON—E. F. MACKENZIE, INSPECTOR

Aug. 23	Phosphate of Soda (Eff.)	62881	F. J. Hardison, Sydney, C.B.	1 05	H. K. Wainpole & Co., Perth, Ont.	9 0	None	45 4	63881
" 23	"	63882	P. M. F. Carter, Sydney, C.B.	1 96	Wyethia	6 45	"	32 5	63882

DISTRICT OF NEW BRUNSWICK—JOHN C. FERGUSON, INSPECTOR

June 26	Phosphate of Soda (Eff.)	78061	Nat. Drug & Chem. Co., St. John, N.B.	1 lb.	1 25	John Wyeth & Bros., Philadelphia	6 45	None	32 5	78061
July 3	"	78062	E. Clinton Brown, St. 3 boxes.	1 40	H. K. Wainpole & Co., Ltd., Perth, Ont.	9 20	"	47 4	78062	
" 4	"	78063	A. Chipman-Smith & Co., St. John, N.B.	75	Vendors	9 10	"	45 9	78063	
" 4	"	78064	Moore's Drug Store, St. 3	1 05	Parke, Davis & Co., Walkerville, Ont.	9 10	"	45 9	78064	
" 9	"	78065	Watson's Drug Store, St. 3	1 05	The Moyes Chem. Co., Toronto.	8 25	None	41 6	78065	
" 26	"	78066	John, N.B. & Johnston, St. John, N.B.	3	1 20	Wyeth & Bros., Montreal.	6 50	"	32 8	78066
Aug. 10	"	78067	Wade Drug Co., Ltd., Perth, N.B.	3	1 05	Parke Davis & Co., Walkerville.	8 80	"	44 4	78067
" 22	"	78068	B. J. Sharp, Sussex, N.B. 3	1 25	H. K. Wainpole & Co., Perth, Ont.	9 15	"	40 1	78068	
" 24	"	78069	J. D. B. F. McKenzie, Chatham, N.B.	3	1 56	John Wyeth & Bros., Philadelphia.	6 10	"	30 7	78069
" 25	"	78070	Dickinson & Troy, New-castle, N.B.	3	1 20	Parke Davis & Co., Ltd., Montreal.	8 85	"	44 6	78070

DISTRICT OF QUEBEC CITY—F. X. W. E. BELAND, INSPECTOR

June 21	Phosphate of Soda, Eff.	71225	J. A. Leclerc, 516 St. Jean, Quebec.	1 lb.	1 25	Chas. Frost & Co.	8 55	None	43 1	71225
" 21	"	71226	H. W. Kinnear, 135 St. Jean, Quebec.	1	1 25	John Wyeth & Bros.	5 60	"	28 2	71226
" 21	"	71227	W. B. Rogers, 44 Fabrique, Quebec.	1	1 50	C. Frost & Co.	8 65	"	43 6	71227
" 21	"	71228	Dr. Ed. Marin, Cote de la Montagne, Quebec.	1	1 25	"	8 75	"	44 1	71228
" 22	"	71229	J. E. Lavigne, St. Jean & Couillard, Quebec.	1	1 17	"	8 65	"	43 6	71229

BULLETIN No. 393—PHOSPHATE OF SODA, EFFERVESCENT—TABLE II.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cont.		Name and Address of Manufacturer or Furnisher as given by the Vendor.		Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.			No. of Sample.	Remarks and Opinion of the Chief Analyst.	
				Quantity.	Cent.	Manufacturer.	Furnisher.		Phosphoric Acid P ₂ O ₅ per cent.	Arsenic, parts per million.	Sodium Phosphate (Na ₂ HPO ₄ 12 H ₂ O)			
DISTRICT OF QUEBEC CITY—Continued.														
1917														
June 22	Phosphate of Soda, Eff.	71236	J. C. Turcot, 117 St. Jean, Quebec.	1 lb.	1 50	W. Horner & Co.	Mfrs.		8.90	Nine	44 4	71236		
" 22	"	71238	V. Giroux, 16 St. Pierre, Quebec.	1 "	1 20	F. W. Homer	"		8.80	"	44 4	71238		
" 22	"	71239	A. E. Franour, 304 St. Jean, Quebec.	1 "	1 20	Wampole	Mfrs.		9.45	"	47 6	71239		
" 22	"	71240	M. Joliveau, 388 St. Jean, Quebec.	1 "	1 50	F. W. Homer	"		9.00	"	45 4	71240		
" 22	Composite Phosph. Soda, Eff.	71241	J. C. Dubé, 152 St. Jean, Quebec.	1 "	1 59	"	"		9.16	"	45 9	71241		
" 22	Phosphate of Soda, Eff.	71243	J. Laroché, 303 St. Paul, Quebec.	1 "	1 56	John Wyeth & Bros.	"		6.70	"	33 8	71243		
DISTRICT OF QUEBEC PROVINCE—N. CADIEUX, T. GENDREAU, J. H. RIOUX, TEMPORARY INSPECTORS.														
June 18	Phosphate of Soda, Eff.	5630	Eug. Fournier, St. Jerome, P.Q.	3 lot.	1 05	Nat. Drug Co.			10.9	Trace.	54 9	5630		
" 25	"	5648	J. M. Drew, M.D., La Roche, P.Q.	3 "	1 00	"			11.2	"	56 4	5648		
" 15	"	7355	A. E. Michon, Montmagny, P.Q.	3 "	1 50	Toronto Pharmacal Ltd., Toronto.			11.0	Nine.	55 4	7355		
July 10	"	7713	Dr. Lepage, Rimouski	3 pks.	1 00	"			10.3	Trace.	51 9	7713		
" 11	"	7717	H. Sirois, Trois Pistoles	3 bot.	1 54	"			11.4	Nine.	57 4	7717		

" 11	"	7717 H. Sirois, Trois Pistoles. 3 bot. 1 54	11 4 None	53 4	7717
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June 16	Phosphate of Soda, Eff.	7337 Dr. J. L. Gagnon, Mont. 3 bot. 2 25 C. E. Frost, Montreal.	27 0 None	136 0	7337
July 4	"	5022 E. G. Clouthier, Fraser. 1 lb. 1 75 Unknown.	24 0	1 0 130 9	5022

DISTRICT OF THREE RIVERS—Dr. V. P. LAVALLEE, INSPECTOR.

June 12	Phosphate of Soda, Eff.	7454 L. A. Ruchier, Joliette. 12 oz. 1 25 Parke Davis & Co., Walkerville.	10 2	1 0 51 4	7454
" 20	"	7455 Pharmacie Normand, 1 lb. 1 50 John Wyeth Bro., Philadelphia.	8 5	3 0 42 8	7455
" 30	"	7484 J. A. Pettier, Three Rivers 1 " 35 Nat. Drug & Chem. Co., Montreal.	8 3	1 0 41 8	7484
" 21	"	7492 J. E. Chevalier, Sorel. 3 pkts. 1 35 Lyman's Ltd., Montreal.	8 3	1 0 41 8	7492
" 21	"	7494 W. Weilbrenner, Sorel. 3 " 1 06 Nat. Drug & Chem. Co., Montreal.	10 6	2 0 53 4	7494

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

Aug. 13	Phosphate of Soda, Eff.	58493 A. F. Larue, 66 St. Lawrence Blvd. Montreal. 3 bot. 1 50 H. K. Wampole Ltd.	9 6	2 0 48 4	58493
" 18	"	58494 F. W. Horner, Ltd. St. 3 " 80 Vendor.	9 2 None	50 0	58494
" 13	"	58495 Piquin Wilbred, 640 Mt. Urbain St., Montreal. 1 lb. 1 25 John Wyeth & Bro.	9 5	2 0 47 9	58495
" 14	"	58496 P. R. Thomas, Bleury St., Montreal. 3 bot. 1 50 Popular Chem. Co.	9 3 None	46 9	58496
" 15	"	58497 M. Albert, 911 St. Lawrence Blvd., Montreal. 3 " 1 50 C. E. Frost & Co.	10 9	2 0 51 3	58497

DISTRICT OF VALLEYFIELD—J. J. COSTIGAN, ACTING INSPECTOR.

June 20	Phosphate of Soda, Eff.	74331 F. C. Saunders, Bedford. 3 bot. 1 30 Frank W. Horner, Ltd., Montreal.	9 1	2 0 45 9	74331
" 21	"	74332 Arm Bourgeois, St. Johns, P.Q. 3 " 1 50 Parke Davis & Co.	10 0	1 0 50 4	74332
" 21	"	74333 P. P. Sabourin, St. Johns, P.Q. 1 lb. 1 25 " "	11 1	2 0 55 9	74333
" 26	"	74334 B. Ostrum & Son, Alexandria. 3 bot. 1 20 John Wyeth & Bro.	8 6	1 0 40 3	74334
" 26	"	74335 John McLeister, Alexandria. 3 " 1 06 Lyman's, Ltd.	10 0	Trace	74335

BULLETIN No. 393—PHOSPHATE OF SODA, EFFERVESCENT—TABLE II.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is it, in an expression of opinion).	Results of Analysis.			Remarks and Opinion of the Chief Analyst.
				Quantity.	Cents.			Phosphoric Acid P_2O_5 per cent.	Arsenic, parts per million.	Sodium Phosphate $(Na_2HPO_4 \cdot 12H_2O)$	

DISTRICT OF VALLEYFIELD—Concluded.

1917.											
June 28	Phosphate of Soda, Eff.	74336	(rev. W. Johnston, Cowansville.	3 bbls.	1 05			10.5	2.0	52.9	74336
" 30	"	74337	Dr. Laroche, Valleyfield.	3 "	2 28	Parke Davis & Co.		11.1	None	55.9	74337
July 11	"	74338	S. E. McGibbon, Hawkesbury.	2 "	85	"		9.5	"	47.9	74338
" 11	"	74339	Dr. J. A. Huot, Levis.	3 "	1 05	Lynans, Ltd.		12.5	"	63.0	74339
" 16	"	74340	James Fortune, Huntingdon.	3 "	1 50	Davis Lawrence Co.		10.2	3.0	51.4	74340

DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.

June 26	Phosphate of Soda, Eff.	77520	T. T. Beattie, Ave., Ottawa.	3 bbls.	1 20	H. K. Wampole, Perth.		10.5	1.0	52.9	77520
" 28	"	77524	W. A. Henderson, Bank and Gladstone, Ottawa.	3 "	1 20	F. W. Horner, Ltd., Montreal.	100 gms. contain 30 gms. Sod. Phos. Each teaspoonful contains 3 grams Sod. Phosp.	9.6	4.0	48.4	77524
" 30	"	77525	C. A. McHaffie, Cornwall.	3 "	1 06	John Wyeth & Bro., Philadelphia.	One dram equals 30 grains of Sod. Phos.	9.0	2.0	45.4	77525

"	30	"	"	77525	C. A. McHaffie, Cornwall.	3	"	1 05	John Wyeth & Bro., Philadelphia.	"	"	9 0	2 0	45 4	77525
Phosph. One dram equals 30 grains of Soda. Phos.															

July	14	"	"	77536	Wallace & Co., Pembroke.	10 cts.	"	"	E. Nat. Drug & Chem. Co., Ottawa.	"	"	50 per cent Soda.	16 0	2 0	80 6	77536
"	28	"	"	77562	L. A. Wilson, Smith's Falls.	3 bts.	"	"	78 Toronto Pharmaceutical Co., Ltd., Toronto.	"	"	Guaranteed to contain a pro- per amount of active prin- ciple.	13 8	3 0	69 5	77562

DISTRICT OF KINGSTON—JAMES HOGAN, INSPECTOR.

June	13	Phosphate of Soda. Eff.	72558	W. E. Austin, Kingston.	3 bts.	1 05	Wampole & Co., Perth.	"	"	"	9 8	2 0	49 4	72558
"	13	"	72559	Estate C. S. Prouse, Kingston.	3 "	1 05	Parks Davis Co., Wal- kerville.	"	"	"	10 0	None	50 4	72559
"	14	"	72560	T. H. Sargent, Kingston.	3 "	1 05	John Wyeth & Bro., Philadelphia.	"	"	"	7 6	Trace.	38 3	72560
"	14	"	72561	A. P. Chown, Kingston.	3 "	90	Wampole & Co., Perth.	"	"	"	10 0	1 0	50 4	72561
"	14	"	72562	Mahood Drug Co., Kingston.	3 "	90	"	"	"	"	10 1	2 0	50 9	72562
"	14	"	72563	L. J. Best, Kingston.	3 "	1 05	E. G. West, Toronto.	"	"	"	7 9	3 0	39 8	72563
"	18	"	72564	F. C. Clarke, Belleville.	3 "	75	H. Wampole & Co., Perth.	"	"	"	11 0	1 0	55 4	72564
"	19	"	72565	W. A. Wright, Picton.	3 "	1 05	"	"	"	"	9 5	4 0	52 9	72565
"	19	"	72566	E. F. Fraser, Trenton.	3 "	1 05	The Moyes Chem. Co., Toronto.	"	"	"	9 7	2 0	48 9	72566
"	19	"	72567	J. Sharie, Trenton.	3 "	1 05	H. Wampole & Co., Perth.	"	"	"	11 4	2 0	57 4	72567

DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

June	21	Phosphate of Soda. Eff.	77878	G. Tambllyn Ltd., 389 Broadview Ave., Toronto.	3 bts.	75	H. K. Wampole & Co., Perth.	"	"	"	9 2	3 0	46 4	77878
"	21	"	77879	T. Crittenden, 601 Sher- bourne St., Toronto.	3 "	1 28	The Moyes Chem. Co. Ltd., Toronto.	"	"	"	9 3	2 0	46 9	77879
"	21	"	77882	R. Tutbill, 911 Bloor St. W., Toronto.	3 "	1 26	F. W. Horner Ltd., Montreal.	"	"	"	9 0	None	45 4	77882
"	22	"	77880	W. H. Robson, 296 Gerrard St. E., Toronto.	3 "	1 03	Parks Davis Co., Wal- kerville.	"	"	"	9 0	Trace.	45 4	77880
"	22	"	77882	J. R. Hume, 1243 Dundas St. W., Toronto.	3 "	1 09	Vendor.	"	"	"	9 4	"	46 4	77882
"	23	"	77883	W. H. Robson, 296 Gerrard St. E., Toronto.	3 "	1 11	C. E. Frost & Co., Montreal.	"	"	"	10 4	3 0	52 4	77883

BULLETIN No. 393—PHOSPHATE OF SODA, EFFERVESCENT—TABLE II.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.			Remarks and Opinion of the Chief Analyst.
				Quantity.	Cents.			Phosphoric Acid P ₂ O ₅ per cent.	Arsenic, parts per million.	Sodium Phosphate Na ₂ HPO ₄ ·12 H ₂ O.	

DISTRICT OF TORONTO—Concluded.

1917.						Vendors.....		9.3	3.0	46.9	77884
June 23	Phosphate of Soda, Eff.	77884	The Robt. Simpson Drug Co. Ltd., Queen and Yonge Sts., Toronto.	3 bots.	75						
"	"	77885	The F. E. Kain Co. Ltd., Queen and Victoria, Toronto.	3 "	78	Nat. Drug & Chem. Co. Ltd., Toronto.		17.6	4.0	88.7	77885
"	"	77886	W. L. Wood, Gerrard and Church Sts., Toronto.	3 "	1.35	H. Mulford & Co., New York.	100 per cent pure.	14.8	1.0	74.6	77886
"	"	77887	E. E. Rutherford, 135 King St. E., Toronto.	3 "	1.00	H. K. Wampole Co. Ltd., Perth.	B. P.	9.8	None	49.4	77887

DISTRICT OF HAMILTON—H. J. DAGER, ACTING INSPECTOR.

July	3	Phosphate of Soda, Eff.	77944	W. H. Beattie, Guelph....	3 bots.	1.11	H. K. Wampole Co., Perth.	10.0	4.0	50.4	77944
"	3	"	77945	J. D. McKee, Guelph....	3 "	1.50	John Wyeth & Bros., Philadelphia.	7.8	1.0	39.3	77945
"	5	"	77946	E. M. Devitt, Waterloo, O.	3 "	1.26	Pennular Chem. Co., Detroit.	9.2	4.0	46.4	77946
"	5	"	77947	J. H. Shoemaker, Kitchener.	3 "	1.00	Lyman's Ltd., Montreal.	10.9	2.0	54.9	77947
"	9	"	77948	Butler Bros., Brantford....	3 pkgs.	1.11	E. G. West & Co., Toronto.	9.6	3.0	48.4	77948

"	5	"	"	77947 J. H. Shoemaker, Kit-chener.	1 00 Lyman's, Ltd., Mon-treal.	10 9	2 0	54 9	77947
"	9	"	"	77948 Butler Bros., Brantford.	1 11 E. G. West & Co., Toronto.	9 6	3 0	48 4	77948

"	"	"	"	77949 W. H. Robertson, Brantford.	1 75 F. W. Horner Ltd., Montreal.	9 0	2 0	45 4	77949
"	10	"	"	77950 P. M. Dwyer, St. Catharines.	1 11 H. K. Wampole & Co., Ltd., Perth.	10 4	4 0	52 4	77950
"	10	"	"	77951 B. M. Black, St. Catharines.	1 00 E. G. West & Co., Toronto.	9 8	3 0	49 4	77951
"	12	"	"	77952 A. E. Dwyer, 136 James St., Hamilton.	1 05 Parke Davis & Co., Walkerville.	11 4	1 0	57 5	77952
"	13	"	"	77957 Parke & Parke, Market & McNabb Sts., Hamilton.	1 11 Vendors.	12 2	3 0	61 5	77957

DISTRICT OF WINDSOR—JOHN TALBOT, INSPECTOR

June	12	Phosphate of Soda, Eff.	65212 W. S. Howey, Exeter, Ont.	3 bots	1 06 Nat. Drug Co.	16 7	Trace.	84 2	65212
"	13	"	65223 J. E. Hovey, Clinton.	3 "	75 H. K. Wampole, Perth.	9 8	2 0	49 4	65223
"	13	"	65225 W. S. R. Holmes, Clinton.	3 "	1 05 H. K. Wampole, Perth.	10 5	1 0	52 9	65225
"	14	"	65233 A. L. Caldwell, Goderich.	3 "	75 Nat. Drug Co.	18 7	2 0	94 2	65233
"	15	"	65244 T. W. Goodyear, Woodstock, Ont.	3 "	1 11 Peninsular Chem. Co., Walkerville.	10 3	2 0	51 9	65244
"	15	"	65245 J. G. Karn, Woodstock, Ont.	12 oza.	1 05 Parke Davis & Co., Walkerville.	9 3	2 0	46 9	65245
"	15	"	65247 Peipper's Drug Store, Woodstock, Ont.	3 bots.	1 25 H. K. Wampole Co., Perth.	9 5	3 0	47 9	65247
"	15	"	65249 Frank Hyde, Woodstock, Ont.	3 "	1 05 Parke Davis & Co., Walkerville.	9 5	2 0	47 9	65249
"	18	"	65254 Taylor Drug Co., London.	3 "	75 Nat. Drug Co.	20 1	Trace.	101 3	65254
"	19	"	65255 Cook's Red Drug Store, St. Thomas.	12 oza.	1 05 H. K. Wampole Co., Perth.	9 7	None.	48 9	65255

DISTRICT OF NORTHERN ONTARIO—THOS. E. ARMSTRONG, INSPECTOR.

July	3	Phosphate of Soda, Eff.	78601 Geo. S. Tatham, New Lis-leard.	3 bots.	1 05 H. K. Wampole, Perth.	10 2	2 0	51 4	78601
"	3	"	78613 F. C. Shaw, Cobalt.	3 "	1 10 Lymana, Ltd., Toronto.	9 1	7 0	45 9	78613 Arsenic in excess
"	5	"	78616 Curtis DeFoe Co., Haileybury.	3 "	1 50 John Wyeth & Bros., Philadelphia.	9 6	2 0	48 4	78616
"	5	"	78617 P. H. Jory, Ltd., Haileybury.	3 "	1 11 Moyas Chem. Co., Toronto.	9 6	5 0	48 4	78617

BULLETIN No. 393—PHOSPHATE OF SODA EFFERVESCENT—TABLE II.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.		Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.			Remarks and opinion of the Chief Analyst.
				Quantity.	Cents.	Manufacturers.	Furnisher.		Phosphoric Acid P_2O_5 per cent.	Arsenic, parts per million.	Sodium Phosphate (Na_2HPO_4) H_2O , 12	

DISTRICT OF MANITOBA—J. B. COSGROVE, INSPECTOR.

1917.											
June 26	Phosphate of Soda, Eff.	75369	J. H. Doods, 2091 Portage Ave., Winnipeg.	3	1.25	Martin Bole & Wynne, Winnipeg.	.....	9.2	1.0	46.4	75369
" 26	"	75370	Roberts & Walker, 1824 Portage Ave., Winnipeg.	3	1.05	D. W. Bradshaw, Winnipeg.	.....	9.7	1.1	48.9	75370
" 27	"	75371	McKensies Drug Store, 843 Provencher, Winnipeg.	3	1.05	C. E. Frost, Montreal.	.....	10.0	2.0	50.4	75371
" 28	"	75372	McCullough's Drug Store, 739 Ellis Ave., Winnipeg.	3	1.05	"	.....	10.0	3.0	50.4	75372
" 28	"	75373	J. K. Brown, Elmwood, Winnipeg.	3	1.20	Toronto Pharmaceutical Co., Toronto.	.....	11.5	3.0	57.9	75373
July 4	"	75374	Johnson's Drug Store, 301 Bismarck.	3	1.50	Parke Davis Co., Waukeville.	.....	9.2	3.0	46.4	75374
" 4	"	75375	C. F. Haselfield, Deloraine.	3	1.50	"	.....	10.7	1.0	53.9	75375
" 10	"	78505	F. E. Campbell, Holland.	3	1.25	H. K. Wampole, Perth.	.....	8.5	3.0	42.8	78505
" 24	"	79518	International Drug Co., 543 Selkirk Ave., Winnipeg.	3	1.50	C. E. Frost, Montreal.	.....	10.5	2.0	52.9	79518
" 26	"	79519	Store's Drug Store, 807 Portage Ave., Winnipeg.	3	1.50	Toronto Phar. Co., Toronto.	.....	12.5	3.0	63.0	79519

DISTRICT OF SASKATCHEWAN L. H. HALL AND J. M. DANIS, INSPECTORS.

" 26 "	" 79519 "	mixg. Store's Drug Store, 907 3 "	Portage Ave., Winnipeg	1.50 Toronto Phar. Co., Toronto.	12.5	3.0	63.0	79519
June 14	Phosphate of Soda, Eff.	77037 T. C. Ostrander, Moose Jaw.	3bota.	1.50 Penicular Chem. Co., Walkerville.	10.5	1.0	52.9	77037
" 14 "	" "	77038 E. B. Carruthers, Moose Jaw.	3 "	1.50 C. E. Frost, Montreal	9.5	4.0	47.9	77038
" 14 "	" "	77040 H. S. Hamilton, Moose Jaw.	3 "	1.26 Nat. Drug & Chem. Co., Montreal.	9.8	1.0	49.4	77040
" 18 "	" "	77044 Carter & Wright, Assiniboia.	3 "	1.50 Toronto Pharmacal Co., Toronto.	12.2	1.0	61.5	77044
" 18 "	" "	77046 Morrison & Nightingale, Shaunavon.	3 "	1.50 Parke Davis Co., Winnipeg.	9.5	2.0	47.9	77046
" 18 "	" "	77047 Fowle's Drug Store, Shaunavon.	3 "	1.50 C. E. Frost, Montreal	9.5	4.0	47.9	77047
" 23 "	" "	77066 Canada Drug & Book Co., Regina.	3 "	1.50 John Wyeth & Bro., Philadelphia.	7.5	4.0	37.8	77066
" 13 "	" "	77071 Herbert Drug Co., Herbert.	3 "	1.05 Martin Bole & Wynne, Winnipeg.	8.0	3.0	40.3	77071
Aug. 7	" "	77087 Groh's Drug Store, Straasburg.	3 "	1.05 H. K. Wampole & Co., Perth.	10.5	2.0	52.9	77087
" 8 "	" "	77090 Regina Pharmacy Ltd., Regina.	3 "	1.05 E. G. West & Co., Toronto.	8.0	4.0	40.3	77090
" 8 "	" "	78508 L. A. Brown, North Battleford.	3 "	1.50 Nat. Drug Co., Montreal.	8.3	3.0	41.8	78508
" 8 "	" "	78511 J. H. Abbott, North Battleford.	3 "	1.05 H. K. Wampole & Co., Perth.	10.5	3.0	52.9	78511

DISTRICT OF ALBERTA—A. W. R. MARKLEY, INSPECTOR.

June 14	Phosphate of Soda, Eff.	52713 Wendell Maclean, Calgary.	3bota.	1.20 Parke Davis & Co., Walkerville.	R.P. Put up perfectly for vendor. Contains 50 p.c. Sod. Pho.	12.0	3.0	60.5	52713
" 14 "	" "	52714 McGill Drug Store, 9th Ave. and 2nd St. E., Calgary.	3 "	1.20 " "	Contains 50 p.c. Sod. Pho.	10.0	1.0	50.4	52714
" 14 "	" "	52715 John J. Weinfield Drug Co. Ltd., Calgary.	3 "	2.25 C. E. Frost & Co., Montreal.	"	9.3	5.0	46.9	52715
" 21 "	" "	52716 E. M. Carpenter, Edmonton.	1 lb.	50 Nat. Drug & Chem. Co., Montreal.	Contains 50 p.c. Sod. Pho.	10.0	1.0	50.4	52716
" 21 "	" "	52717 J. F. McCallum, Edmonton.	3bota.	1.05 H. K. Wampole & Co., Perth.	"	8.5	3.0	42.8	52717
" 21 "	" "	52718 H. L. Hunt, Edmonton.	3 "	1.05 Parke Davis & Co., Walkerville.	"	11.0	2.0	55.4	52718
" 21 "	" "	52719 The Owl Drug Co., "	3 "	1.50 John Wyeth & Bro., Philadelphia.	"	7.0	1.0	35.2	52719

BULLETIN No. 39. — PHOSPHATE OF SODA, EFFERVESCENT — TABLE II.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher, as given by the Vendor.	Inspector's Report. (Is not an expression of opinion).	Results of Analysis.			No. of Sample.	Remarks, and Opinion of the Chief Analyst.
				Quantity.	Cents.			Phosphoric Acid P_2O_5 per cent.	Arsenic, parts per million.	Sodium Phosphate (Na_2HPO_4)		

DISTRICT OF ALBERTA—Concluded.												
1917.												
June 28	Phosphate of Soda, Eff.	52720	Hume Ring Co., Medicine Hat.	3 bbls.	1 20	C. E. Frost & Co., Montreal.	.....	9.5	4.0	47.9	52720	
" 29	"	52721	Frank Hedley Drug Co., Lethbridge.	3 "	1 80	Wm. R. Wainer & Co., Philadelphia.	.....	15.0	3.0	75.6	52721	
July 10	"	52722	Oliver Bros., Calgary.	3 "	1 05	H. K. Wampole & Co., Montreal.	Contains 50 p.c. Sod. Pho.	9.5	2.0	47.9	52722	

DISTRICT OF ROCKY MOUNTAINS—THOS. PARKER, INSPECTOR.												
July 13	Phosphate of Soda, Eff.	68425	E. W. Hazlewood, Trail.	3 bbls.	1 20	Parke Davis & Co., Walkerville.	.....	10.36	Nil.	51.2	68425	
" 17	"	68444	W. H. Wainman, Rossland.	3 "	1 50	Nat. Drug & Chem. Co., Montreal.	.....	9.86	0.7	49.4	68444	
" 24	"	68455	Rutherford Drug Co., Nelson.	3 "	1 50	H. K. Wampole & Co., Perth.	.....	9.88	0.5	49.9	68455	
" 24	"	68456	Poolle Drug Co., Nelson.	3 "	1 50	C. E. Frost & Co., Montreal.	.....	10.08	0.7	50.8	68456	
" 24	"	68457	Poolle Drug Co., Nelson.	3 "	1 05	Vendors.	.....	11.80	0.5	59.5	68457	
" 24	"	68461	City Drug & Stationary Co., Nelson.	3 "	1 05	Toronto Pharmaceutical Co., Toronto.	.....	10.76	Nil.	54.2	68461	

DISTRICT OF VANCOUVER—G. G. ARMYTAGE, INSPECTOR.

June 18	Phosphate of Soda (Eff.)	75822	Standard Drug Store, Broadway and Alberta, Vancouver.	3 bots.	1 56	H. K. Wampole & Co., Perth.				9 32	Trace.	46 9	75822
" 19	"	75823	The Owl Drug Co., Main & Hastings, Vancouver.	3 "	1 20	Parke, Davis & Co., Walkerville.				8 56	Nil.	43 1	75723
" 20	"	75824	Knowlton's Ltd., 15 Hastings St. E., Vancouver.	3 "	1 50	"				10 88	Trace.	54 8	75824
" 20	"	75825	Woodward's Dept. Stores, Ltd., Hastings and Abbott, Vancouver.	3 "	1 20	Unknown				9 20	"	46 4	75825
" 20	"	75826	Manhattan Pharmacy, Thurlow and Robson, Vancouver.	3 "	1 20	Nat. Drug & Chem. Co., Vancouver.				10 32	"	52 0	75826
" 20	"	75827	Lax the Druggist, Davie & Granville, Vancouver.	3 "	1 05	C. E. Frost & Co., Montreal.				9 76	0 5	49 4	75827
" 21	"	75828	David Spencer, Ltd., 515 Hastings St. W., Vancouver.	3 "	1 20	Parke, Davis & Co., Walkerville.				8 48	Nil.	42 7	75828
" 25	"	75829	H. Ryall, 701 Columbia St., New Westminster.	3 "	1 50	"				8 76	Trace.	44 2	75829
" 26	"	75830	Capitola Pharmacy, Davie & Thurlow, Vancouver.	3 "	2 25	H. K. Wampole & Co., Perth.				8 92	0 5	45 0	75830
" 27	"	75831	Pacific Drug Stores, Ltd., Hastings and Seymour, Vancouver.	3 "	1 50	Jolin Wyeth & Bro., Philadelphia.				8 32	Nil.	41 9	75831

DISTRICT OF VICTORIA—G. G. ARMYTAGE, ACTING INSPECTOR.

July 13	Phosphate of Soda (Eff.)	75902	J. B. Hodgins, Nanaimo.	3 bots.	1 00	H. K. Wampole & Co., Perth.				9 32	0 5	46 9	75902
" 13	"	75903	A. C. Van Houton, Nanaimo.	3 "	1 00	"				8 40	Trace.	42 3	75903
" 25	"	75904	David Spencer, Ltd., Victoria.	3 "	1 05	D. Howard's Family Remedy Co., Walkerville.				9 92	Nil.	50 0	75904
" 25	"	75905	D. E. Campbell, Fort and Douglas, Victoria.	3 "	1 50	Parke, Davis & Co., Walkerville.				8 76	"	44 2	75905
" 26	"	75906	F. J. Williams, Fort and Government, Victoria.	3 "	1 50	"				8 80	"	44 4	75906
" 26	"	75907	W. Jackson & Co., 153 Douglas St., Victoria.	3 "	1 05	H. K. Wampole & Co., Perth.				8 48	0 7	42 7	75907
" 26	"	75908	Dean & Hiscock, 627 Yates St., Victoria.	3 "	1 00	Parke, Davis & Co., Walkerville.				9 08	Nil.	45 8	75908

CORRECTION.

Bulletin No. 382 page 6, sample Liniment of Camphor No. 76526, under Remarks and Opinion of the Chief Analyst should appear the following: "Genuine as to camphor content, but made with olive oil which contains cotton seed oil."